CLAIMS

1. A method of screening for a compound that modulates a GPR35 protein, comprising the step of:

(a) contacting a GPR35 protein or a partial polypeptide thereof with a test compound.

2. A method of screening for a compound that modulates neural activity, comprising the steps of:

(a) contacting a GPR35 protein or a partial polypeptide thereof with a test compound.

3. A method of screening for a compound that modulates digestive system, comprising the steps of:

(a) contacting a GPR35 protein or a partial polypeptide thereof with a test compound.

4. A method of screening for a compound that inhibits the binding of a ligand to a GPR35 protein, comprising the steps of:

(a) contacting a GPR35 protein or a partial polypeptide thereof with the ligand,

(b) contacting a GPR35 protein or a partial polypeptide thereof prepared in the substantially same manner as the one used in the step (a) with the ligand prepared in the substantially same manner as the one used in the step (a), in the presence of a test compound, and

(c) comparing the results of the step (a) and the step (b) to determine whether the binding of the ligand is affected by the presence of the test compound.

5. The method according to claim 4, wherein

a detectable label is bound to said ligand, and

said step (c) comprises the step of comparing the detected amount of label in the step (a) and the detected amount of label in the step (b).

6. A method of screening for a compound that is an agonist of a GPR35 protein, comprising the steps of:

(a) adding a test compound to cells expressing a GPR35 protein or a partial polypeptide thereof or to a membrane fraction from the cells, and

(b) determining whether a functional response is observed.

7. A method of screening for a compound that is an antagonist of GPR35 protein, comprising the steps of:

(a) adding an agonist to cells expressing GPR35 protein or a partial polypeptide thereof or to

a membrane fraction from the cells,

(b) adding an agonist prepared in the substantially same manner as the one used in the step (a) and a test compound to the cells or the membrane prepared in the substantially same manner as the one used in the step (a), and

(c) comparing a functional response in the step (a) and one in the step (b) to determine whether the functional response is reduced by the test compound.

8. A method according to claim 6 or 7, wherein said functional response is a transient rise in intracellular calcium concentration.

9. The method according to claim 4 or 7, wherein said ligand or said agonist is selected from zaprinast, an analogue thereof, or a mimetic thereof.

10. The method according to any one of claims 1-4, wherein the GPR35 protein or the partial polypeptide thereof in the step (a) exists in cells or a membrane fraction.

11. The method according to any one of claims 1-4, 6, and 7 to screen a compound for use in the treatment or prevention of any of the following conditions:

pain, anxiety, convulsions, cognition disorders, obesity, schizophrenia, neurodegeneration, depression, attention deficit hyperactivity disorder, mania, memory deficit, eating disorders, Parkinson's disease, Huntington's disease, Alzheimer's disease, amyotrophic lateral sclerosis, drug addiction, bipolar disorders, circadian rhythm disorders, migraine, sexual dysfunctions, sleep disorders, functional dyspepsia, Irritable Bowel Syndrome (IBS), diarrhea, emesis, gastro-esophageal reflux disease, Barrett's esophagus, esophageal achalasia, gastroparesis, postoperative ileus, constipation, non-cardiac chest pain (NCCP), bronchial asthma(BA), bronchitis, and chronic cough.

12. The method according to any one of claims 1-4, 6, and 7, wherein said test compound consists of a plurality of compounds.

13. A method according to any one of claims 1-4, 6, and 7, wherein said GPR35 protein is selected from the following;

(a) a polypeptide having the amino acid sequence of sequence ID. 2, 4, or 6,

(b) a polypeptide having the same amino acid sequence as the polypeptide of (a) except that one or more amino acids are deleted, substituted, or added,

(c) a polypeptide having an amino acid sequence that has at least 80% identity to the the

polypeptide of (a),

(d) a polypeptide having an amino acid sequence that has at least 90% identity to the the polypeptide of (a),

(e) a polypeptide having an amino acid sequence that has at least 98% identity to the the polypeptide of (a), and

(f) a human GPR35 protein, a mouse GPR35 protein, or a rat GPR35 protein.

14. Use of zaprinast, an analogue thereof, or a mimetic thereof as a modulator of a GPR35 protein.

15. An isolated and/or purified polypeptide of one of the following;

(a) a polypeptide having the amino acid sequence of sequence ID. 2,

(b) a polypeptide having the same amino acid sequence and the same kind of activity as the polypeptide of (a) except that one or more amino acids are deleted, substituted, or added,

(c) a polypeptide having an amino acid sequence that has at least 86% identity to the polypeptide of (a),

(d) a polypeptide having an amino acid sequence that has at least 90% identity to the polypeptide of (a), and

(e) a polypeptide having an amino acid sequence that has at least 98% identity to the polypeptide of (a).

16. An isolated and/or purified polynucleotide of one of the following;

(a) a polynucleotide having the nucleotide sequence of sequence ID. 1,

(b) a polynucleotide that is capable of hybridizing under stringent conditions to a polynucleodide having a nucleotide sequence complementary to the nucleotide sequence of the polynucleotide of (a) and that encodes a polypeptide having the same kind of activity as the polypeptide encoded by the polynucleotide of (a),

(c) a polynucleotide having a nucleotide sequence that has at least 90% identity to the tpolynucleotide of (a),

(d) a polynucleotide having a nucleotide sequence that has at least 95% identity to the polynucleotide of (a),

(e) a polynucleotide having a nucleotide sequence that has at least 98% identity to the polynucleotide of (a), and

(f) a polynucleotide that encodes the polypeptide according to the claim 15.

17. An expression vector containing the polynucleotide according to claim 16.

18. Transformed cells that express the polypeptide according to claim 15.

19. An antibody immunospecific for the polypeptide according to claim 15.

20. Transformed cells that stably express any of following polypeptides;

(a) a polypeptide having the amino acid sequence of sequence ID. 2, 4, or 6,

(b) a polypeptide having the same amino acid sequence and the same kind of activity as the polypeptide of (a) except that one or more amino acids are deleted, substituted, or added,

(c) a polypeptide having an amino acid sequence that has at least 80% identity to the polypeptide of (a),

(d) a polypeptide having an amino acid sequence that has at least 90% identity to the polypeptide of (a), and

(e) a polypeptide having an amino acid sequence that has at least 98% identity to the polypeptide of (a).

21. A novel compound that is identifiable by the method according to any one of claims1-4, 6, and 7.

22. A medicament for use to modulate GPR35 activity comprising a compound that is identifiable by the method according to any of claims1-3, 5, and 6.

23. The medicament according to claim 21 comprising a compound selected from the group consisting of the following compounds;

2-methyl-5-phenyl-pyrazolo[1,5-a]pyrimidin-7(4H)-one,

3-(4,7-dihydro-1-methyl-7-oxo-3-propyl-1H-pyrazolo[4,3-d]pyrimidin-5-yl)-4-ethoxy-benzenepropanoic acid,

3-[3-(4,5-dihydro-3-methyl-4-oxo-1-propyl-1H-pyrazolo[3,4-d]pyrimidin-6-yl)-4-propoxyphenyl]-2-propenoic acid,

2,4-dihydro-2-methyl-5-[2-(2-methylpropoxy)-5-(1H-tetrazol-5-yl)-3-pyridinyl]-3-propyl-7H-Pyrazolo[4,3-d]pyrimidin-7-one,

2,4-dihydro-2-methyl-5-[2-(2-methylpropoxy)-5-(1H-1,2,3-triazol-4-yl)-3-pyridinyl]-3-propyl-7H-Pyrazolo[4,3-d]pyrimidin-7-one,

5-(2-ethoxyphenyl)-1,4-dihydro-7H-1,2,3-Triazolo[4,5-d]pyrimidin-7-one,

3-(4,7-dihydro-7-oxo-1H-1,2,3-triazolo[4,5-d]pyrimidin-5-yl)-4-propoxy-benzenesulfonyl chloride,

3-(4,7-dihydro-7-oxo-1H-1,2,3-triazolo[4,5-d]pyrimidin-5-yl)-4-propoxy-benzenesulfonamide,

5-Nitro-2-(3-phenylpropylamino)benzoic acid,

2-Cyano-4-hydroxyindole,

2-(2-Propoxyphenyl)-8-trifluoromethylpurin-6-one, and

6-phenyl-1-(phenylmethyl)-1H-Bis[1,2,3]triazolo[1,5-a:4',5'-e]pyrimidin-4(5H)-one.

24. Use of a compound that is identifiable by the method according to any one of claims1-4, 6, and 7 to modulate GPR35 activity.

25. Use of a compound that is identifiable by the method according to any one of claims 1-4, 6, and 7 for the manufacture of a medicament to modulate GPR35 activity.

26. A method of modulating GPR35 activity by administering a compound that is identifiable by the method according to any one of claims1-4, 6, and 7.